

CLAIMS

1. An apparatus for transmitting user equipment specific
5 information from a base station to a user equipment in a cellular communication system; the apparatus comprising:
means for combining user equipment specific information for a plurality of user equipment to generate combined user equipment specific information;
10 means for encoding the combined user equipment specific information; and
means for transmitting the combined user equipment specific information in a minimum transmission resource unit.
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2. An apparatus as claimed in claim 1 wherein the minimum transmission resource unit is a time slot.
3. An apparatus as claimed in claim 1 wherein the minimum
20 transmission resource unit is a single time code frequency resource allocation unit.
4. An apparatus as claimed in any of the previous claims wherein the means for encoding is operable to jointly encode
25 user equipment specific information for at least two of the plurality of user equipment.
5. An apparatus as claimed in claim 4 wherein the means for encoding is operable to jointly encode user equipment
30 specific information associated with all user equipment of the plurality of user equipment.

6. An apparatus as claimed in claim 4 or 5 wherein the encoding comprises forward error correcting coding

7. An apparatus as claimed in any of the claims 4 to 6
5 wherein the user equipment specific information comprises a plurality of parameters each having a number of possible values, and wherein the means for encoding is operable to encode the plurality of parameters by encoding a combined parameter having a combined number of possible values equal
10 to the product of the number of possible values of the plurality of parameters.

8. An apparatus as claimed in any of the previous claims wherein the user equipment specific information comprises
15 power control information.

9. An apparatus as claimed in any of the previous claims wherein the user equipment specific information comprises synchronisation information.
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10. An apparatus as claimed in any of the previous claims wherein the user equipment specific information comprises only synchronisation information.

25 11. An apparatus as claimed in any of the previous claims wherein the user equipment specific information is associated with an uplink channel from each of the plurality of user equipment.

30 12. An apparatus as claimed in any of the previous claims further comprising means for setting a transmit power for the minimum transmission resource unit in response to a

transmit power requirement of the plurality of user equipment.

13. An apparatus as claimed in any of the previous claims
5 further comprising means for transmitting position information indicative of a position of user equipment specific information for a first user equipment.

14. An apparatus as claimed in any of the previous claims
10 wherein the user equipment specific information is control information associated with High Speed Downlink Packet Access (HSDPA) service.

15. An apparatus as claimed in claim 14 wherein the user
15 equipment specific information is associated with an uplink dedicated physical channel (DPCH) of the HSDPA downlink packet data service.

16. An apparatus as claimed in any of the previous claim
20 wherein the means for encoding is operable to encode the combined user equipment specific information by using processing algorithms of a group of algorithms used by a plurality of services.

25 17. An apparatus as claimed in any of the previous claims wherein the cellular communication system is a Time Division Duplex (TDD) cellular communication system.

18. An apparatus as claimed in claim 16 wherein the
30 cellular communication system is the UTRA (UMTS (Universal Mobile Telecommunication System) Terrestrial Radio Access)

TDD cellular communication system specified by the 3rd Generation Partnership Project.

19. An apparatus as claimed in claim 18 wherein the user
5 equipment specific information consists of Transmit Power Control (TPC) and Synchronisation Shift (SS) data.

20. An apparatus as claimed in any of the previous claims
further comprising means for determining a transmit power of
10 the minimum transmission resource unit in response to a number of user equipment for which the minimum transmission resource unit comprises user equipment specific information.

21. An apparatus as claimed in any of the previous claims
15 further comprising means for determining an encoding process for the minimum transmission resource unit in response to a number of user equipment for which the minimum transmission resource unit comprises user equipment specific information.

20 22. An apparatus as claimed in any of the previous claims wherein the minimum transmission resource unit does not comprise verification data.

23. An apparatus as claimed in any of the previous claims
25 wherein the means for transmitting is operable to transmit user equipment specific information for a first user in intermittent minimum transmission resource units.

24. An apparatus as claimed in any of the previous claims
30 wherein the minimum transmission resource unit corresponds to a minimum size transmission block of user equipment

specific information which can be transmitted by the means for transmitting.

25. An apparatus as claimed in any of the previous claims
5 wherein the apparatus is a base station

26. A user equipment for receiving user equipment specific information from a base station in a cellular communication system; the apparatus comprising:

10 means for receiving a minimum transmission resource unit comprising combined user equipment specific information for a plurality of user equipment; and

means for determining user specific information for the user equipment from the minimum transmission resource unit.

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27. A user equipment as claimed in claim 26 wherein the combined user equipment specific information is jointly encoded; and wherein the means for determining comprises means for decoding the combined user equipment specific
20 information and for selecting the user equipment specific information for the user equipment.

28. A cellular communication system comprising
a first apparatus for transmitting user equipment
25 specific information from a base station to a user equipment, the first apparatus comprising:

means for combining user equipment specific information for a plurality of user equipment to generate combined user equipment specific information,

30 means for encoding the combined user equipment specific information, and

means for transmitting the combined user equipment specific information in a minimum transmission resource unit; and

the user equipment comprising:

5 means for receiving a minimum transmission resource unit comprising combined user equipment specific information for a plurality of user equipment; and

10 means for determining user specific information for the user equipment from the minimum transmission resource unit.

29. A method of transmitting user equipment specific information from a base station to a user equipment in a
15 cellular communication system; the method comprising the steps of:

combining user equipment specific information for a plurality of user equipment to generate combined user equipment specific information;

20 encoding the combined user equipment specific information; and

transmitting the combined user equipment specific information in a minimum transmission resource unit.

25 30. A method of receiving user equipment specific information from a base station in a cellular communication system; the method comprising the steps of:

receiving a minimum transmission resource unit comprising combined user equipment specific information for
30 a plurality of user equipment; and

determining user specific information for the user equipment from the minimum transmission resource unit.